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ASSESSMENT OF TRUE FIR SALVAGE GUIDELINES, EAST AND WEST SIDES OF THE TAHOE NATIONAL FOREST

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ABSTRACT

The summer of 1992 marked the sixth consecutive year of drought in California. Marking guidelines used on the Tahoe National Forest were not capturing the mortality resulting from this environmental stress and modification of the guidelines were deemed necessary. Modified guidelines are given along with a monitoring procedure for adjustment of the guidelines.

INTRODUCTION

With several Tahoe Forest personnel, on June 5, 1992, I visited an area northwest of Ladybug Peak on the Truckee Ranger District, and the Ground Hog Rock area on the Sierraville Ranger District. Heavy mortality caused by the fir engraver beetle was occurring in these areas. On June 12 I observed mortality in white and red fir at Robinsons Flat, Sunflower Hill, and section 34, Red Star Ridge, all on the Foresthill Ranger District, Tahoe National Forest.

OBSERVATIONS

Precipitation in the Truckee and Sierraville area was 45% of normal in 1991-1992, and the trees and stands remain under stress from the on-going six-year drought. These areas have been entered each year since 1990 to salvage mortality brought about by fir engraver beetles successfully attacking the stressed firs.

Five white firs were examined after felling on June 5th.

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and Scolytus praeceps or S. opacus were found in the stem. Egg hatch occurred in galleries found for another seven feet below the faded foliage. However, larvae had not reached maturity before dying. In the lower portion of this zone, eggs hatched and larvae fed only from those egg nitches on the upper side of the egg gallery. Within this seven feet and for another 8-10 feet below, phloem moisture was determined to be less than normal to the touch. Thus, for about 15 ft below the faded area, the crown was drying. In toto, about 25 ft (45% of the crown length) was dead or found to be stressed.

Tree 2 -- 24 inches diameter at the stump. There was very minor twig browning at the top of the crown. Numerous unsuccessful attacks were found along the bole. However, phloem moisture in the upper 10-12 ft was less than normal, and indicated that future attacks in this area probably would be successful.

Tree 3 -- slightly smaller than tree 1. This fir had thin, off-color foliage. Three pitch streamers were visible from the ground, and about 15 streamers were estimated when the tree was felled. (The underside of the bole was not visible.) None of the attacks were successful and phloem along the entire bole was wet to the touch.

Sierraville.

Tree 1 -- This was a small sawtimber-size white fir with the top 10% of the crown visibly dying. Brood of the fir engraver were present. Reduced phloem moisture was apparent to the touch for another 10-12 ft below the top-kill.

Tree 2 -- Approximately the same size as tree 3 on the Truckee. This white fir had numerous pitch streamers visible from the ground. All attacks were found to be repulsed, but many had resulted in patches of dead tissue that were beginning to heal over. The phloem was wet to the touch throughout the crown.

Foresthill (June 12, 1992).

Observations on the Foresthill District indicated that changes from the two years of precedent with current guidelines are not presently justified. However, the use of pitch streaming as an indicator is to be dropped. Consultation with forest entomologists around the state and review of the literature indicates that pitch streaming is not a reliable indicator of tree mortality. Scolytus bark beetles are not aggressive insects, but take advantage of hosts under stress. They also have a low tolerance of host resins emanating from wounds. This host resistance accounts for the high frequency of healed wounds found in white fir on the Tahoe National Forest.

DISCUSSION

Under the present condition of a six-year drought, foresters on the eastside Forest Districts state that firs with a 10-20% top loss have a high probability of dying within nine months to a year. The marking guidelines given in Appendix I are based on this observation and upon the marking guidelines used on the two districts over the past two years. The later guidelines were not

delimiting mortality sufficiently to reduce the frequency of entry into the stands for salvage.

To verify this observation, a total of 35 trees have been marked on the eastside Districts. Fifteen were marked in the Sagehen area, 10 hear Ladybug Peak, and 10 near Silver Peak south of Truckee. These trees were marked with numbered tags, lime-yellow flagging and a yellow card noting,

> "Drought/mortlaity study tree, do not fell without permission of Forest Pest Management, 415/705-2757."

These trees will be followed and photographed at periodic intervals and the marking guidelines of Appendix I will be modified as indicated by the viability of these trees. The data sheet used for these trees is given in Appendix II.

Mortality on the Foresthill District seemed to conform with the marking guidelines used for the past two years and these guides were only slightly modified except for the statement on pitch streaming (Appendix I). Nevertheless, 34 trees were marked on the Foresthill District. Ten are located 0.55 miles east of the Soda Springs junction on the French Meadow Road, 19 are located at the hairpin turn near Sunflower Hill, and five are located northeast of the Robinson Flat junction. These trees were marked in the same manner as the eastside trees.

The guidelines for the east and west side of the Tahoe National Forest are not to be construed as a host harvesting approach, but only that of a local rating approach based on visible symptoms of recent attack by bark beetles and wood borers, plus other indicators of host stress. The premise is to reduce entries into the stands and thereby reduce additional stress while claiming wood fiber otherwise lost to wood boring insects and wood rotting fungi.

The present outbreak and related mortality is expected to persist as long as the drought persists and will subside when this temporary environmental condition returns to "normal". During this time dry sites and sites with a high stand density and a high percentage of fir will be at high risk of damage and tree loss. Many sites which should be growing pine, but have a high component of white fir because of past site history, presently fall into these categories.

TRUE FIR SALVAGE MARKING GUIDELINES

Tahoe N.F. -- Truckee & Sierraville Ranger Districts
Revised June and July 1992

A tree may be marked for salvage if it meets the following conditions:

Any one of --

1. A recent dead or fading top that is at least 10% of the live crown in length (off-color or reddish-brown needles. Do not confuse the bronze reflectance of old cone spikes with "off-color".) An old dead top or gray needles without any recent fading or reddish-brown needles does not qualify as this indicates an older condition and probable stability in the prospects for that tree.

2. Fresh green needles lying on the ground at the base of the tree.

3. Boring dust/frass. Whitish boring dust/frass found in bark crevices and or webbing around at least 75% of the bole circumference.

Any of the following combinations: 1+3, 1+4, 2+3, or 2+4

1. Old dead top with adjacent live branches (2 or more whorls) beginning to fade or already reddish-brown.

2. Recent dead top or fading less than 10% of the live crown.

3. Recent dieback (reddish-brown or fading) of 10% or more of the side branches within the live crown of a tree with a recently dead top.

4. Woodpecker work on the lower bole (several holes 1/4"+ in diameter)

<u>This</u> <u>revision</u> explicity excludes the use of pitch streaming as a valid salvage marking criteria.

These guidelines are to be reviewed in January 1993.

TRUE FIR SALVAGE MARKING GUIDELINES

Tahoe N.F. -- Westside Ranger Districts, Revised June & July 1992

A tree may be marked for salvage if it meets the following conditions:

Any one of --

1. A recent dead or fading top that is at least 10% of the live crown in length (off-color or reddish-brown needles. Do not confuse the bronze reflectance of old cone spikes with "off-color".) An old dead top or gray needles without any recent fading or reddish-brown needles does not qualify as this indicates an older condition and probable stability in the prospects for that tree.

2. Fresh green needles lying on the ground at the base of the tree.

3. Boring dust/frass. Whitish boring dust/frass found in bark crevices and or webbing around at least 75% of the bole circumference.

Any of the following combinations: 1+3, 1+4, 2+3, or 2+4

1. Old dead top (no needles or gray needles) with adjacent live branches (2 or more whorls) beginning to fade or already reddish-brown.

2. Recent dead top or fading less than 25% of the live crown.

3. Recent dieback (reddish-brown or fading) of 10% or more of the side branches within the live crown of a tree with a recently dead top.

4. Woodpecker work on the lower bole (several holes 1/4"+ in diameter)

<u>This revision</u> explicity excludes the use of pitch streaming as a valid salvage marking cirteria.

These guidelines are to be reviewed in January 1993.

Crown symptoms, e.g. No. & location of dead branches

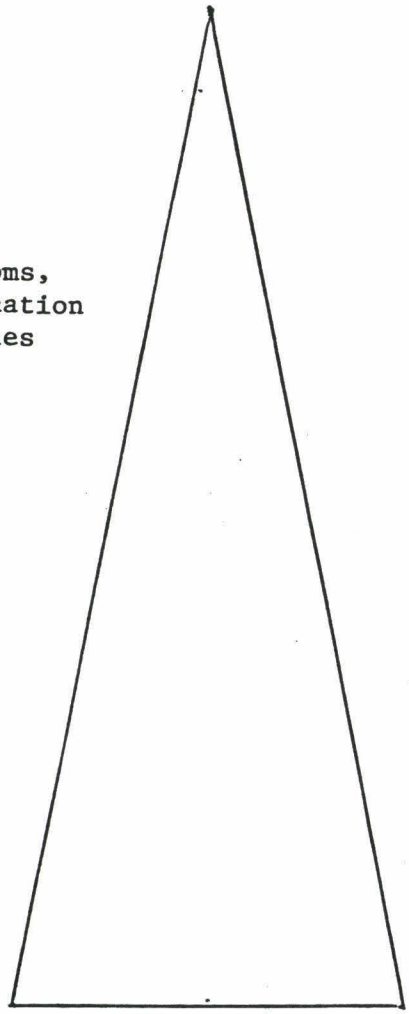
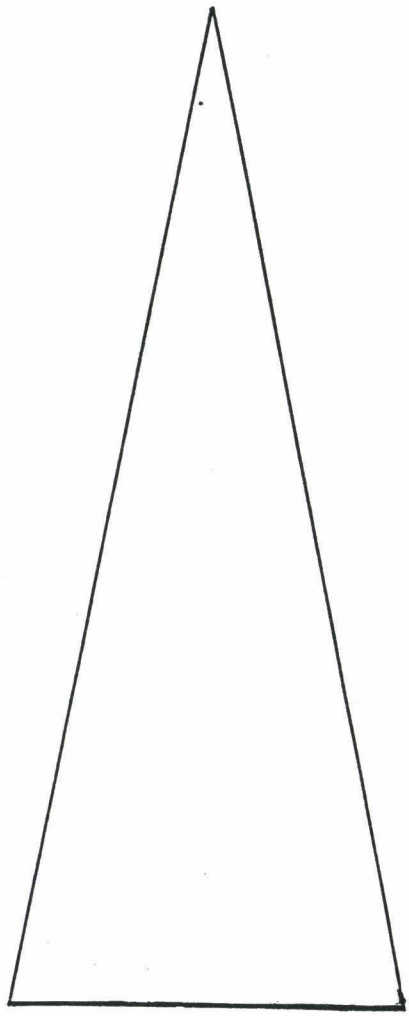


Photo Front



Reverse

Crown bottom (ft) _____

Remarks: _____

_____

_____

WF No. _____ dbh (in) _____ Tree Ht. (ft.) _____ Crown Length (ft) _____

1	2	3	4
Initial Date _____	Reexam Date _____	Reexam Date _____	Reexam Date _____
Top-kill (ft) _____	Top-kill (ft) _____	Top-kill (ft) _____	Top-kill (ft) _____
No. Dead Branches _____	_____	_____	_____
Boring Ht. _____	_____	_____	_____
Dust Cir. _____%	_____%	_____%	_____%
Photo Nos. _____	_____	_____	_____

Photo angle to tree _____ °